## (1) GENERAL INFORMATION:

- (i) APPLICANT: Fischer, Gerald W. Schuman, Richard F. Wong, Hing Stinson, Jeffrey L.
- (ii) TITLE OF INVENTION: OPSONIC AND PROTECTIVE MONOCLONAL AND CHIMERIC ANTIBODIES SPECIFIC FOR LIPOTEICHOIC ACID OF GRAM POSITIVE BACTERIA
- (iii) NUMBER OF SEQUENCES: 89
- (iv) CORRESPONDENCE ADDRESS:
  - (A) ADDRESSEE: FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP
  - (B) STREET: 1300 I Street, NW
  - (C) CITY: Washington
  - (D) STATE: DC
  - (E) COUNTRY: USA
  - (F) ZIP: 20005-3315
- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
    - (B) COMPUTER: IBM PC compatible
    - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
    - (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER: US 09/097.055
  - (B) FILING DATE: 15-JUN-1998
- (viii) ATTORNEY/AGENT INFORMATION:
  - (A) NAME: Einaudi, Carol P.
  - (B) REGISTRATION NUMBER: 32,220
  - (C) REFERENCE/DOCKET NUMBER: 04995.0041-00000
  - (ix) TELECOMMUNICATION INFORMATION:
    - (A) TELEPHONE: 202-408-4000
    - (B) TELEFAX: 202-408-4400
- (2) INFORMATION FOR SEO ID NO:1:
  - (1) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 15 amino acids
    - (B) TYPE: amino acid (C) STRANDEDNESS:
    - (D) TOPOLOGY: linear

  - (i1) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser Pro 1 10 15

- (2) INFORMATION FOR SEQ ID NO:2:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 15 amino acids
    - (B) TYPE: amino acid (C) STRANDEDNESS:
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: peptide
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly Arg 1  $$\rm 10^{\circ}$ 

- (2) INFORMATION FOR SEQ ID NO:3:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 21 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: other nucleic acid
     (A) DESCRIPTION: /desc = "primer"
  - (x1) SEQUENCE DESCRIPTION: SEO ID NO:3:

TGAATTTTCT GTATGAGGTT T

21

- (2) INFORMATION FOR SEO ID NO:4:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 30 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - (B) LOCATION: 1..30
  - (xi) SEQUENCE DESCRIPTION: SEO ID NO:4:

30

GGG GCT CAT GCG GAT AGG GTT TAT GGG GCC Gly Ala His Ala Asp Arg Val Tyr Gly Ala

- (2) INFORMATION FOR SEQ ID NO:5:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 10 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein
    - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:
- Gly Ala His Ala Asp Arg Val Tyr Gly Ala 1 5 10
- (2) INFORMATION FOR SEO ID NO:6:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 30 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - (B) LOCATION: 1..30
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:
- GGG ANT CAT GCG GAT AGG GTT TAT GGG GCC
  Gly Xaa His Ala Asp Arg Val Tyr Gly Ala
  1 5 10
  - (2) INFORMATION FOR SEQ ID NO:7:
    - (i) SEQUENCE CHARACTERISTICS:
      - (A) LENGTH: 10 amino acids
      - (B) TYPE: amino acid
      - (D) TOPOLOGY: linear
    - (ii) MOLECULE TYPE: protein
    - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:
  - Gly Xaa His Ala Asp Arg Val Tyr Gly Ala 1 5 10
  - (2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEO ID NO:8: GGG GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GGT Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 10 CGT GGG GCC 57 Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:9: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEO ID NO:9: Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 10 Arg Gly Ala
- (2) INFORMATION FOR SEC TO NO:10:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A), NAME/KEY: CDS
    - (B) LOCATION: 1..57

	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:	
	GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 10 15	48
	GGG GCC Gly Ala	57
(2)	INFORMATION FOR SEQ ID NO:11:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:	
Gly 1	Ale Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 5 10 15	
Ile	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:12:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDMESS: single (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:	
	GCT TGG AAG GCT TTG TTT AGT CAT TCT TAT CGT CCT CGG GGT TCG Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 5 10 15	48
	GGG GCC Gly Ala	57

(2) INFORMATION FOR SEQ ID NO:13:

- \_(i).SEQUENCE CHARACTERISTICS: | (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEO ID NO:13: Gly Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 10 5 Ala Gly Ala (2) INFORMATION FOR SEO ID NO:14: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT 48 10 15

Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly

CGT GGG GCC Arg Gly Ala 57

- (2) INFORMATION FOR SEQ ID NO:15:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 19 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein
  - (xi) SEQUENCE DESCRIPTION: SEO ID NO:15:
- Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 10

Arg Gly Ala

- (2) INFORMATION FOR SEO ID NO:16: (i) SEOUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: CDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEO ID NO:16: GGG GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Gly Ala Trp His Trp Arq His Arq Ile Pro Leu Gln Leu Ala Ala Gly 10 CGT GGG GCC 57 Arg Gly Ala (2) INFORMATION FOR SEO ID NO:17: (i) SEOUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17: Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly Arg Gly Ala (2) INFORMATION FOR SEO ID NO:18:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (W) PPWGIH: 21 Daze Dai
    - (3) TYPE: nucleic acid
    - (C) STRANDEDNESS: single (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE: . (A) NAME/KEY: CDS

(B)	LOCATION:	1.	. 57
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(xi) SEOUENCE DESCRIPTION: SEO ID NO:18:

GGG GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT 4.8 Gly Ala Tro His Trp Arq His Arq Ile Pro Leu Gln Leu Ala Ala Gly CGT GGG GCC

Arg Gly Ala

5.7

- (2) INFORMATION FOR SEC ID NO:19:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 19 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 10

Arg Gly Ala

- (2) INFORMATION FOR SEQ ID NO:20:
  - (i) SEOUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - (B) LOCATION: 1..57
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

GGG GCT CAG GTG GCT GTT TTG TAT CCT CCT TTG GCT GAT GCT ACT GAG Gly Ala Gln Val Ala Val Leu Tyr Pro Pro Leu Ala Asp Ala Thr Glu 1.0

CTT GGG GCC Leu Gly Ala

57

48

- \_ (2) INFORMATION FOR SEQ\_ID NO:21:\_
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 19 amino acids
    - (B) TYPE: amino acid (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Gly Ala Gln Val Ala Val Leu Tyr Pro Pro Leu Ala Asp Ala Thr Glu

Leu Glv Ala

- (2) INFORMATION FOR SEQ ID NO:22:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - (B) LOCATION: 1..57
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

GGG GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG
Gly Ala Arg Arg His Gly Asn Phe Ser His Phe His Arg Ser Leu
1 1 15

ATT GGG GCC

57

Ile Gly Ala

(2) INFORMATION FOR SEO ID NO:23:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 amino acids
  - (B) TYPE: amino acid
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: protein
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:
- Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 5 10 15

## (2) INFORMATION FOR SEC ID NO:24:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (ix) FEATURE:
  - (A) NAME/KEY: CDS
  - (B) LOCATION: 1..57
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

GGG GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG
Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu
1 1 5 10 15

ATT GGG GCC Ile Gly Ala 57

(2) INFORMATION FOR SEQ ID NO:25:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 amino acids
  - (B) TYPE: amino acid
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: protein
- (xi) SEQUENCE DESCRIPTION: SEO ID NO:25:

Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu  $1 \ \ \, 10$ 

Ile Gly Ala

- (2) INFORMATION FOR SEQ ID NO:26:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (11) MOLECULE TYPE: cDNA

(ix) FEATURE:

(A) NAME/KEY: CDS (B) LOCATION: 1..57

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

	GOT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT ALA Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 10	4.8
	GGG GCC Gly Ala	57
(2)	INFORMATION FOR SEQ ID NO:27:	
	(i) SEQUENCE CHARACTERISTICS:  (a) LEMOTH: 19 amino acids  (B) TYPS: amino acid  (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:	
Gly	Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser $$\rm 10$$	
Pro	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:28:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (3) TYPE: nucleic acid (C) STRANDEDINESS: single (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:	
	GCT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 5 10	48
	GGG GCC . Gly Ala	57

(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:	
Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 10 15	
Pro Gly Ala	
(2) INFORMATION FOR SEQ ID NO:30:	
(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 57 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDMESS: single  (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/XEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:	
GGG GCT TGG CGG AAG TAT TTT TCT TAT CAT CAT GCG CAT CTT TGT AGT Gly Ala Trp Arg Lys Tyr Phe Ser Tyr His His Ala His Leu Cys Ser $1 \ 5 \ 10 \ 15$	48
CCT GGG GCC Pro Gly Ala	57

(2) INFORMATION FOR SEQ ID NO:31:

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 amino acids
  - (B) TYPE: amino acid (D) TOPOLOGY: linear

  - (ii) MOLECULE TYPE: protein
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Gly Ala Trp Arg Lys Tyr Phe Ser Tyr His His Ala His Leu Cys Ser 1  $\phantom{\bigg|}$  15

Pro Gly Ala

(2) INFORMATION FOR SEO ID NO:32:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (ix) FEATURE:
  - (A) NAME/KEY: CDS
  - (B) LOCATION: 1..57
- (xi) SEQUENCE DESCRIPTION: SEQ ID No:32:

GGG GCT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 5 15 15 .

CCT GGG GCC Pro Gly Ala 57

48

- (2) INFORMATION FOR SEO ID NO:33:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 19 amino acids

(xi) SEQUENCE DESCRIPTION: SEO ID NO:33:

- (B) TYPE: amino acid (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: protein
- •
- Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser

Pro Gly Ala

- (2) INFORMATION FOR SEQ ID NO:34:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear

	(ii) MOLE	CULE TYP	E: cDNA					-	;		
		TURE: NAME/KE LOCATION									
	(xi) SEQU	JENCE DESC	CRIPTION	: SEQ	ID NO	:34:					
	GCT TGG (								Ser		48
	GGG GCC Gly Ala										57
(2)	INFORMATI	ON FOR SI	EO ID NO:	:35:						,	
		QUENCE CH (A) LENGT (B) TYPE: (D) TOPOI	HARACTERI TH: 19 am : amino a	ISTICS mino a acid							
	(ii) MC	LECULE TY	PE: prot	ein							
	(xi) SE	QUENCE DE	SCRIPTIO	ON: SEG	Q ID 1	NO:35:					
Gly 1	Ala Trp A	rg Met Ty 5	r Phe Se	er His	Arg F	is Ala	His Le	u Arg 15	Ser		
Pro	Gly Ala										
(2)	INFORMATI	ON FOR SE	Q ID NO:	36:							
	(A) (B) (C)	ENCE CHAR LENGTH: TYPE: nu STRANDED TOPOLOGY	57 base cleic ac NESS: si	pairs id ngle							
	(ii) MOLE	CULE TYPE	: cDNA								
		URE: NAME/KEY LOCATION									
	(xi) SEQU	ENCE DESC	RIPTION:	SEQ I	: CK C	36:					

57

(2)	INFORMATION FOR SEQ ID NO:37:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:	
Gly 1	Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser $$\rm 10$$ $^{\circ}$ 15	
Pro	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:38:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE. (A) NAME/KEY: CDS (B) LOCATION: 157	
	(x1) SEQUENCE DESCRIPTION: SEQ ID NO:38:	
	GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu  5 10 15	48

(2) INFORMATION FOR SEQ ID NO:39:

ATT GGG GCC

Ile Gly Ala

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 amino acids
  - (B) TYPE: amino acid (D) TOPOLOGY: linear
- (D) TOTOLOGI. IIMea.
- (ii) MOLECULE TYPE: protein

## (xi) SEQUENCE DESCRIPTION: SEQ TO NO:39: Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 10 Ile Gly Ala (2) INFORMATION FOR SEQ ID NO:40: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40: GGG GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly CGT GGG GCC 57 Arg Gly Ala (2) INFORMATION FOR SEC ID NO:41: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41: Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 5 10 Arg Gly Ala

- (2) INFORMATION FOR SEQ ID NO:42:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - · (C) STRANDEDNESS: single

- \_ (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (ix) FEATURE:
  - (A) NAME/KEY: CDS
  - (B) LOCATION: 1..57
- (xi) SEQUENCE DESCRIPTION: SEO ID NO:42:

GGG GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu ī 5 1.0

ATT GGG GCC Ile Glv Ala 57

48

- (2) INFORMATION FOR SEO ID NO:43:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 19 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein
  - (xi) SEQUENCE DESCRIPTION: SEO ID NO:43:
- Gly Ala Arq Arq His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 10

Ile Glv Ala

- (2) INFORMATION FOR SEO ID NO:44:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid (D) TOPOLOGY: linear
    - (C) STRANDEDNESS: single
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - (B) LOCATION: 1..57
  - (X1) SEQUENCE DESCRIPTION: SEQ ID NO:44:

1	5 1	.0		15		
	GGG GCC Gly Ala					51
(2)	INFORMATION FOR SEQ ID NO:45:					
	<ul><li>(i) SEQUENCE CHARACTERISTICS:</li><li>(A) LENGTH: 19 amino acid</li><li>(B) TYPE: amino acid</li><li>(D) TOPOLOGY: linear</li></ul>	5				
	(ii) MOLECULE TYPE: protein					
	(xi) SEQUENCE DESCRIPTION: SEQ I	D NO:45:				
Gly 1	Ala Asp Trp Ile Thr Phe His Arg Ar 5		Asp Arg	Val 15	Leu	
Ser	Gly Ala					
(2)	INFORMATION FOR SEQ ID NO:46:					
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear					
	(ii) MOLECULE TYPE: cDNA					
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157					
	(xi) SEQUENCE DESCRIPTION: SEQ ID	NO:46:				
	GCT GGT TGG ATT ACT TTT CAT CGT CGT Ala Gly Trp Ile Thr Phe His Arg Arg 5	His His				48

GGG GCT GAT TGG ATT ACT TTT CAT CGT CGT CAT CAT GAT CGT GTT CTT

Gly Ala Asp Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu

48 .

57

(2) INFORMATION FOR SEQ ID NO:47:

TCT GGG GCC

Ser Gly Ala

- (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids

(b) TOFOLOGI: III.ear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:	
Gly Ala Gly Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu 1 5 10	
Ser Gly Ala	
(2) INFORMATION FOR SEQ ID NO:48:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:	
GGG GCT GGG AAG GCT ATG TTT AGT CAT TCT TAT CGT CAT CGG GGT TCG Gly Ala Gly Lys Ala Met Phe Ser His Ser Tyr Arg His Arg Gly Ser 1 10 15	
GCT GGG GCC 57 Ala Gly Ala	
(2) INFORMATION FOR SEQ ID NO:49:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Gly Ala Gly Lys Ala Met Phe Ser His Ser Tyr Arg His Arg Gly Ser 1  $$10\$ 

Ala Gly Ala

(2) INFORMATION FOR SEQ ID NO:50:

- (i) SEOUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEO ID NO:50: GGG GCT GAT TGG ATT ACT TTT CAT CGT CGT CAT CAT GAT CGT GTT CTT 48 Gly Ala Asp Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu 10 TCT GGG GCC 57 Ser Gly Ala (2) INFORMATION FOR SEQ ID NO:51: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:51: Gly Ala Asp Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu 5 10 Ser Gly Ala
- (2) INFORMATION FOR SEO ID NO:52:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 57 base pairs
      - (B) TYPE: nucleic acid
      - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - (B) LOCATION: 1..57

GGG GCT AGT CGT CAT ATG CTT GCT CGG TGG TCG CGT TTG CTT GCT GTT Gly Ala Ser Arg His Met Leu Ala Arg Trp Ser Arg Leu Leu Ala Val 1 5 15	
CCT GGG GCC 57 Pro Gly Ala	
(2) INFORMATION FOR SEQ ID NO:53:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:	
Gly Ala Ser Arg His Met Leu Ala Arg Trp Ser Arg Leu Leu Ala Val 1 5 10 15	
Pro Gly Ala "	
(2) INFORMATION FOR SEQ ID NO:54:	
(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 57 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDNESS: single  (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/XEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:	
GGG GCT GGG AAG GCT ATG TTT AGT CAT TCT TAT CGT CAT CGG GGT TCG GBy Ala Gly Lys Ala Met Phe Ser His Ser Tyr Arg His Arg Gly Ser 1 5 10 15	
GCT GGG GCC 57 Ala Gly Ala	
(2) INFORMATION FOR SEQ ID NO:55:	

(i) SEQUENCE CHARACTERISTICS:

- (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEO ID NO:55: Gly Ala Gly Lys Ala Met Phe Ser His Ser Tyr Arg His Arg Gly Ser Ala Gly Ala (2) INFORMATION FOR SEO ID NO:56: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:56: GGG GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Glv CGT GGG GCC 57 Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:57: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein

. \_ (A) LENGTH: 19 amino acids
(B) TYPE: amino acid

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly
1 5 10 15

Arg Gly Ala .

- (2) INFORMATION FOR SEC ID NO:58: (i) SEOUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:58: GGG GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG 48 Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 5 10 ATT GGG GCC 5.7 Ile Gly Ala (2) INFORMATION FOR SEO ID NO:59: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:59: Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 5 10 Ile Gly Ala (2) INFORMATION FOR SEO ID NO:60: (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 57 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - . (B) LOCATION: 1..57

	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:	
	GCT TGG AAG GCT TTG TTT AGT CAT TCT TAT CGT CCT CGG GGT TCG Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 5 10 15	48
	GGG GCC Gly Ala	57
(2)	INFORMATION FOR SEQ ID NO:61:  (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:	
Gly 1	Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser $$\rm 10$$ $15$	
Ala	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:62:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (3) TYPE: nucleic acid (C) STRNNEDMESS: single (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

GGG GCT CAG GTG GCT GTT TTG TAT CCT CCT TTG GCT GAT GCT ACT GAG Gly Ala Gln Val Ala Val Leu Tyr Pro Pro Leu Ala Asp Ala Thr Gu 10 10

CTT GGG GCC 57

48

leu Gly Ala

(2) INFORMATION FOR SEQ ID NO:63:

(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:	
Gly Ala Gln Val Ala Val Leu Tyr Pro Pro Leu Ala Asp Ala Thr Glu 1 10 15	
Leu Gly Ala	
(2) INFORMATION FOR SEQ ID NO:64:	
(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 57 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDNESS: single  (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:	
GGG GCT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 5 10 15	48
CCT GGG GCC Pro Gly Ala	57
(2) INFORMATION FOR SEQ ID NO:65:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:	
Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser $\frac{1}{10}$	
Dro Clu al-	

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

- (2) INFORMATION FOR SEQ ID NO:66:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 30 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - (B) LOCATION: 1..30
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

GGG GCT CAT GCG GAT AGG GTT TAT GGG GCC Gly Ala His Ala Asp Arg Val Tyr Gly Ala 1

30

- (2) INFORMATION FOR SEO ID NO:67:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 10 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Gly Ala His Ala Asp Arg Val Tyr Gly Ala 1 5 10

- (2) INFORMATION FOR SEQ ID NO:68:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 45 base pairs
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

ATTTCAGGCC CAGCCGGCCA TGGCCGARGT PMAGCTKSAK GAGWC

(2) INFORMATION FOR SEQ ID NO:69:

45

(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 45 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDNESS: single  (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid     (A) DESCRIPTION: /desc = "primer"</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:	
ATTTCAGGCC CAGCCGGCCA TGGCCGARGT YCARCTKCAR CARYC	45
(2) INFORMATION FOR SEQ ID NO:70:	
(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 45 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDNESS: single  (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid     (A) DESCRIPTION: /desc = "primer"</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:	
ATTTCAGGCC CAGCCGGCCA TGGCCCAGGT GAAGCTKSTS GARTC	45
(2) INFORMATION FOR SEQ ID NO:71:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 45 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:	
ATTTCAGGCC CAGCCGGCCA TGGCCGAVGT GMWGCTKGTG GAGWC	45
(2) INFORMATION FOR SEQ ID NO:72:	
(i) SEQUENCE CHARACTERISTICS; (A) LENGTH: 45 base pairs (R) TVPE: nucleic acid	

(C) STRANDEDNESS: SITGLE (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:	
ATTTCAGGCC CAGCCGGCCA TGGCCCAGGT BCARCTKMAR SARTC	45
(2) INFORMATION FOR SEQ ID NO:73:	
(i) SEQUENCE CHARACTERISTICS: (a) LENGTH: 35 base pairs (B) TYPE: nucleic acid (C) STRANDEDMESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:	
GCTGCCACCG CCACCTGMRG AGACDGTGAS TGARG	35
(2) INFORMATION FOR SEQ ID NO:74:	
(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 35 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDNESS: single  (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:	
GCTGCCACCG CCACCTGMRG AGACDGTGAS MGTRG	35
(2) INFORMATION FOR SEQ ID NO:75:	
(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 35 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDNESS: single  (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: other nucleic acid	

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75:	
GCTGCCACCG CCACCTGMRG AGACDGTGAS CAGRG	35
(2) INFORMATION FOR SEQ ID NO:76:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 32 base pairs (B) TYPE: nucleic acid (C) STRANDEDMESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: other nucleic acid  (A) DESCRIPTION: /desc = "primer"	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:	
CCCGGGCCAC CATGGAGACA GACACACTCC TG	32
(2) INFORMATION FOR SEQ ID NO:77:	
(i) SEQUENCE CHARACTERISTICS:  (A) LENGTH: 35 base pairs  (B) TYPE: nucleic acid  (C) STRANDEDNESS: single  (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid     (A) DESCRIPTION: /desc = "primer"</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:	
CCCGGGCCAC CATGGATTTT CAAGTGCAGA TTTTC	35
(2) INFORMATION FOR SEQ ID NO:78:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 32 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid     (A) DESCRIPTION: /desc = "primer"</pre>	

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:	
CCCGGGCCAC CATGGAGWCA CAKWCTCAGG TC	. 32
(2) INFORMATION FOR SEQ ID NO:79:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 33 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:	,
CCCGGGCCAC CATGKCCCCW RCTCAGYTTC TKG	33
(2) INFORMATION FOR SEQ ID NO:80:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 31 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:	
CCCGGGCACC ATGAAGTTGC CTGTTAGGCT G	31
(2) INFORMATION FOR SEQ ID NO:81:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 23 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:	
GCACCTCCAG ATGTTAACTG CTC	23

(2) INFORMATION FOR SEQ ID NO:82:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 54 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid   (A) DESCRIPTION: /desc = "primer"</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:	
TAATATCGCG ACAGCTACAG GTGTCCACTC CCGAAGTGAT GCTGGTGGAG WCTG	54
(2) INFORMATION FOR SEQ ID NO:83:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 30 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:  TTATAGAATT CTGAGGAGAC GGTGAGTGAG	2.0
(2) INFORMATION FOR SEQ ID NO:84:	30
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 29 base pairs (B) TYPE: nucleic acid (C) STRANDENDESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:	
TTAGGCGATA TCGTTCTCC CCAGTCTCC	29
(2) INFORMATION FOR SEQ ID NO:85:	
(i) SEQUENCE CHARACTERISTICS:	

						ESS: lin		gle								
	(ii					oth ON:				cid mer"						
	(xi	) SE	QUEN	CE D	ESCR	IPTI	ON:	SEQ	ID N	0:85	:					
GTA	ACCG	TTC	GAAA	AGTG	TA C	TTAC	GTTT	T AT	TTCC	AGCA	TGG	TCC				46
(2)	INF	ORMA	TION	FOR	SEQ	ID	NO:8	б:								
	(i	(	A) L B) T C) S	ENGT YPE : TRAN	H: 3 nuc DEDN	CTER 69 b leic ESS: lin	ase aci sin	pair d	s							,
	(ii	) MO	LECU	LE T	YPE:	CDN	A									
		(	A) N. B) L	AME/ OCAT	ION:	CDS 1	369	SEO	וא מד	0:86						
C3.3								-				010	0.00		GGG	4.0
	Val									Leu						48
										TTC Phe						96
GCC Ala	ATG Met	AAT Asn 35	TGG Trp	GTC Val	CGC Arg	CAG Gln	GCT Ala 40	CCA Pro	GGA Gly	AAG Lys	GGT Gly	TTG Leu 45	GAA Glu	TGG Trp	GTT Val	144
										GCA Ala					GAT Asp	192
TCA Ser 65	GTG Val	AAA Lys	GAC Asp	AGG Arg	TTC Phe 70	ACC Thr	ATC Ile	TCC Ser	AGA Arg	GAT Asp 75	GAT Asp	TCA Ser	CAA Gln	AGC Ser	ATG Met 80	240
										GAG Glu						288

(A) LENGTH: 46 base pairs (B) TYPE: nucleic acid TAC TOT GTG AGA CGG GGG GCT TCA GGG ATT GAC TAT GCT ATG GAC TAC

TYR CYS Val Arg Arg Gly Ala Ser Gly Ile Asp Tyr Ala Met Asp Tyr

100

105

110

TGG GGT CAA GGA ACC TCA CTC ACC GTC TCC TCA
Trp Gly Gln Gly Thr Ser Leu Thr Val Ser Ser
115 120

369

- (2) INFORMATION FOR SEQ ID NO:87:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 123 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: protein
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

Glu Val Met Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Lys Gly 1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Asn Tyr \$20\$

Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  $_{\rm 35}$   $_{\rm 40}$ 

Ala Arg Ile Arg Ser Lys Ser Asn Asn Tyr Ala Thr Phe Tyr Ala Asp 50

Ser Val Lys Asp Arg Phe Thr Ile Ser Arg Asp Asp Ser Gln Ser Met 65 70 75 80

Leu Tyr Leu Gln Met Asn Asn Leu Lys Thr Glu Asp Thr Ala Met Tyr 85 90 95

Tyr Cys Val Arg Arg Gly Ala Ser Gly Ile Asp Tyr Ala Met Asp Tyr 100 105 110

Trp Gly Gln Gly Thr Ser Leu Thr Val Ser Ser

- (2) INFORMATION FOR SEQ ID NO:88:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 318 base pairs (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: cDNA
  - (ix) FEATURE:
    - (A) NAME/KEY: CDS
    - . (B) LOCATION: 1..318

	(xi	) SE	QUEN	CE D	ESCR	IPTI	ON:	SEQ :	ID N	38:C	:					
	Ile	GTT Val													GGG Gly	4.5
		GTC Val														96
		TAC Tyr 35														144
		TCC Ser														192
		GGG Gly													GAA Glu 80	240
		GCC Ala														288
		GGG Gly														318
(2)	INFO	ORMAT	NOI	FOR	SEQ	ID N	10:89	):								
	,	(i) S	(A)	LE? TYI	NGTH: PE: a	LACTE 106 mino SY: 1	ami aci	.no a		;						
	( i	ii) M	OLEC	ULE	TYPE	: pi	otei	n.								
	(>	ci) S	EQUE	NCE	DESC	RIPI	: NOI	SEÇ	QI Q	NO:8	19:					
Gln 1	Ile	Val	Leu	Ser 5	Gln	Ser	Pro	Ala	Ile 10	Leu	Ser	Ala	Ser	Pro 15	Gly	
Glu	Lys	Val	Thr 20	Met	Thr	Cys	Arg	Ala 25	Ser	Ser	Ser	Val	Asn 30	Tyr	Met	
His	Trp	Tyr 35	Gln	Gln	Lys	Pro	Gly 40	Ser	Ser	Pro	Lys	Pro 45	Trp	īle	Ser	
Ala	Thr 50	Ser	Asn	Leu	Ala	Ser 55	Gly	Val	Pro	Ala	Arg 60	Phe	Ser	Gly	Ser	

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Val Glu Ala Glu 65  $\phantom{+}70\phantom{0}$  75  $\phantom{+}80\phantom{0}$ 

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Pro Thr 85 90 95

Phe Gly Gly Thr Met Leu Glu Ile Arg